

farming and urban development. The diversity of plant species on the bings is considerable and the sites are home to more than 350 plant species (Harvie, 2005b). This is more than have been recorded on the Ben Nevis SSSI

Some of the bings support several plant species not found elsewhere in the county. *Buxbaumia aphylla* Hedw. is a rare moss in Britain that has been recorded in sizeable populations at Addiewell bing for more than 35 years. A small population of the montane lichen *Stereocaulon saxatile* is found on Addiewell bing and extensive colonies of three related and locally rare species *S. leucophaeopsis*, *S. nanodes* and *S. pileatum* are found on Philpstoun bing. Faucheldean bing is noted for colonies of stag's-horn clubmoss and alpine clubmoss (*Lycopodium clavatum*; *Diphasiastrum alpinum*), species that are more usually associated with montane habitats, and renowned for a diverse orchid population including broad helleborine, great butterfly orchid and early purple orchid (*Epipactis helleborine*; *Platanthera chlorantha*; *Orchis mascula*). On the plateau summit of Greendykes a species poor calcareous grassland has established from self seeding species above the bare steep sides of the bing. Genetically distinct birch (*Betula pendula*) woodland has established naturally at the base of the tiny bing at Mid Breich, complete with many of the associated ground flora and bryophyte species of long established native woodlands. There are also exotics in the form of garden escapes that are well established on many bing sites. Opium poppies (*Papaver somniferum*) grow in profusion on more than one bing. Old elder trees growing on many of the bings are an astounding source of epiphytic lichen and moss diversity. Almost half of all the bryophytes that are recorded in Britain are present in the Lothians and shale bing habitats are identified as important to the bryophyte flora (Harvie, 2007).

#### THE FAUNA

Locally rare animals are also often seen, especially on early morning visits. These include hares, red grouse, badgers, sky larks and common blue butterflies (*Lepus europaeus*; *Lagopus lagopus scotica*; *Meles meles*; *Alauda arvensis*; *Polyommatus icarus*). The bings are home to foxes (*Vulpes vulpes*), often seen in family groups, suggesting that many unobserved smaller fauna are also inhabiting the sites. Insect records from Addiewell bing include ringlet butterfly (*Aphantopus hyperantus*), very rare in central Scotland, and a first recording of ten-spot ladybird (*Adalia decapunctata*) in the county. Additional butterfly species recorded at Faucheldean include green-veined white, small heath and common blue (*Pieris napi*; *Coenonympha pamphilus*; *Polyommatus icarus*). Forty seven species of bird were recorded at Addiewell during 1997, including 30 species with permanent breeding territories and nine local habitat indicator species, such as the bullfinch, kestrel and yellowhammer (*Pyrrhula pyrrhula*; *Falco tinnunculus*; *Emberiza citrinella*) (Harvie, 2007).

#### VULNERABILITY

The destruction and landscaping of shale bings is a severe threat to some of the rarer plant species, both locally and nationally. Of the 27 bings extant when shale extraction ceased in 1962 only 19 remain. Many of these are slowly being demolished and the continued, recent loss of sites like Philpstoun (to industry) and Niddrie (to housing development) can only be detrimental to the biodiversity of the county of West Lothian.

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## Urban Biodiversity: Successes and Challenges: Jupiter Urban Wildlife Centre

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Scottish Wildlife Trust's Jupiter Urban Wildlife Centre is situated in the middle of Grangemouth. The 4 hectares are leased from the chemical company Calchem. It is a fine example of land reclamation for nature conservation. In 1989, the chemical giant ICI approached SWT regarding setting up a demonstration wildlife garden on an abandoned part of their Grangemouth site. This area had been a railway siding. Upon acquisition, it was covered in a mixture of sparse grassland, scattered scrub and marshy areas. Jupiter was opened to the public in 1992.

Jupiter can be divided into three areas; wildlife gardens, habitat creation area and "wilderness woodland." The habitat creation area and wildlife gardens contain complex habitat mosaics often with unusual combinations of species, due to their interesting history, with some species having been

present when the area was wasteland, the deliberate creation of certain habitats and a combination of active management and natural succession over the succeeding years.

The wildlife gardens show ideas for creating wildlife friendly spaces. The habitat creation area consists of a number of habitats with artificial origins: wetlands, wildflower rich grasslands and small woodlands. The regenerated “wilderness” woodland is an excellent example of the potential of wasteland if allowed to develop on its own.

Thanks to the rich array of habitats and careful management work, Jupiter supports a wealth of biodiversity. Over 360 species of flowering plant have been recorded and attract many invertebrates. There are records of over 50 species of bird. Mammals are more rarely seen, although some species have been recorded. The ponds support breeding populations of amphibians.

Jupiter is also an important place for people. Curriculum linked education sessions, public events programmes, and volunteering are all popular. SWT’s partner organisation at Jupiter, BTCV Scotland, runs a Wildflower Nursery and a Green Gym. Secondary schools have been involved in exciting projects, designing and creating mosaics, murals and an outdoor classroom.

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## Urban Biodiversity: Successes and Challenges: Glasgow’s local biodiversity – the way forward?

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There were 24 attendees at the ‘Glasgow’s Local Biodiversity – the way forward?’ workshop, where people were asked to consider the following four questions:

1. Do you consider that the Glasgow Biodiversity Partnership is doing enough for biodiversity in the City?
2. What does your local greenspace need to make it good for biodiversity?
3. How can the Partnership best communicate and engage with ‘hard to reach’ groups?
4. What can *you* personally do to improve and enhance local biodiversity?

The results of the workshop, combined with a concurrent on-line questionnaire about biodiversity provision in the City (at [www.glasgow.gov.uk/biodiversity](http://www.glasgow.gov.uk/biodiversity)) will help shape the future direction of the Local Biodiversity Action Plan (LBAP), which is being updated. Due to time constraints, only questions 1-3 were considered and as the first two questions were linked the responses to them have been combined. The key responses are summarised here:

*Q. Do you consider that the Glasgow Biodiversity Partnership is doing enough for biodiversity in the City?*

*Q. What does your local greenspace need to make it good for biodiversity?*

‘More work needed in city centre areas. Everything happens north of the river.

Use the Commonwealth Games to showcase biodiversity to visitors. Need better biological recording, brownfield sites need surveyed. Need better co-ordination between conservationists and contractors. Make sure greenspaces are high quality. Push for more allotments in the City. Provide more awareness of sites that communities can work on. Provide biodiversity interpretation in local parks. Combat vandalism by encouraging community participation and schools involvement.’

*Q. How can the Partnership best communicate and engage with ‘hard to reach’ groups?*

‘Engage more with local industries and companies and make better business links overall. Raise biodiversity profile by establishing a volunteer system linking various organisations. Target unemployed people at job centres to encourage volunteering – advertise. Give youth group talks and activities. Use social media such as facebook. Think about unusual media like drama groups, art and music groups – put on a biodiversity theatre production. Link more with secondary schools. Wider community work with different ethnic groups, taking ‘whole’ communities out on site. Use radio shows, places of worship and other venues to promote biodiversity.’

The update of the LBAP will include the development of a Community Engagement Plan which will allow local people and interest groups to help set local targets for biodiversity, and to consider the topics and queries above. The programme of Local Nature Reserves (LNRs) designation and development will help achieve many of the concerns raised. Linn Park on the south side, will soon be designated as an LNR. Darnley Mill is a proposed LNR, also on the south side of the City. There are LNR leaflets which are designed to raise awareness of biodiversity and the importance of these sites for people and nature. There are already a number of volunteers helping at our LNRs and it is hoped these numbers will increase in the years ahead.

New ideas such as using drama and social media to raise awareness of biodiversity could add a different strand of actions to the updated LBAP.